

Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

Commissioner of Conservation

AND

State Forester

FOR THE

YEAR ENDING NOVEMBER 30, 1926

Mass. DEPARTMENT OF CONSERVATION



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OUTLINE OF REPORT

This report is divided for convenience and economy into four parts:—

Part I. The organization and general work of the Department of Conservation.

Part II. The work of the Division of Forestry.

Part III. The work of the Division of Fisheries and Game.

Part IV. The work of the Division of Animal Industry.

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Part III is printed in a separate volume as Public Document No. 25.

Part IV is printed in a separate volume as Public Document No. 98.

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The Commonwealth of Massachusetts

PART I

ANNUAL REPORT OF THE COMMISSIONER OF CONSERVATION

The annual report of the Department of Conservation is herewith submitted. During the past year twenty-six meetings of the Commissioner and directors were held at which policies were discussed and decided, takings of land approved and rules and regulations voted upon. The records of these meetings are filed in the office.

We have co-operated with the United States Department of Agriculture, receiving federal aid under the Clarke-McNary Act in forest fire work and in nursery work. We have co-operated with the State Departments of Health and Agriculture, in control of tuberculosis in cattle and in control of white pine blister rust respectively, and with private associations also.

FOREST CONSERVATION.

On Tuesday, April 20, 1926, the United States Congress adopted an order which provided that on the following Thursday the entire time of the House of Representatives should be devoted to a discussion of the general subject of conservation of forests. One has only to read the earnest and eloquent remarks made by many of the recognized leaders of Congress on that occasion as printed in the Congressional Record to become fully convinced that it is absolutely essential to our future well-being that we enter upon and maintain with unabated vigor a forestry program which shall include the care and wise use of the forests that remain, as well as reclaiming by reforestation as far as practicable the millions of acres of now idle and unproductive lands.

To those, who because of insufficient information concerning the subject, believe that forestry is simply a beautiful dream of the sentimentalists we would call attention to the words found in a proclamation of President Coolidge last March when he said, "Too long have we as a nation consumed our forest wealth without adequate provision for its wise utilization and renewal."

It has now become a generally recognized fact that the damage which was ruthlessly committed by the unscientific and short-sighted lumbering operations of the past will require many years to repair. However, I am happy to express the conviction that within a few years in spite of the short-sighted opposition of a few, a thoughtful and intelligent public interest has been aroused and that the great work of forest restoration will go on uninterruptedly until our forests of Massachusetts are rehabilitated.

To no state in the Union is this question of more vital importance than to the Commonwealth of Massachusetts. History shows that within the memory of many people now living, Massachusetts produced from her own soil a sufficient amount of timber to meet the lumber demand of her varied industries while today more than 80% of the timber used is imported from outside the state. If during the time this timber was being cut and marketed, far-seeing legislators had made it obligatory that no trees be cut unless others were set out on the cut-over land, we should not now be facing such a situation. The forest policy started in 1919 will correct this condition, if it is persevered in, and in from twenty-five to forty years, Massachusetts should be in a position to cut approximately 450 million feet of timber annually. This, whether cut from private

wood lots or from state-owned land, will do much to help her industries, which otherwise may find it hard to get the necessary supply of wood anywhere, and will also bring in a considerable income.

If we want to point to an outstanding example of this kind of public reforestation, we cannot do better than look at Germany, with its wonderful state-owned forests. To an American traveller, Belgium, France and Italy look bare of forests. One can ride for miles without seeing a really good sample of forest. Switzerland and Germany on the other hand seem well-wooded. It certainly is forehanded, practical and economical for the state to acquire waste land, plant it and thus build up a supply of lumber and fire wood for future generations. In southern Europe every scrap of wood, no matter how small, is used for fire wood, and the burning of logs in open fireplaces is an unheard-of luxury, while here in New England we are still able to be prodigal with fires. If we do not want to come to the state where like "Mother Hubbard" of old, our cupboard will be bare, let us lay the foundation now for our future supply.

CONSERVATION OF DOMESTIC ANIMALS.

To protect the public health from the danger from contagious diseases among domestic animals is the function of the Division of Animal Industry. In order to have pure milk, sweet and wholesome meat, the herds of bovine animals must be inspected often, and kept clean from deteriorating disease. Especially important is the detection and eradication of bovine tuberculosis. This disease is detected by the application of the tuberculin test to the herd. In this way, herds are cleaned and only healthy cows kept for business purposes.

This work is only restricted by size of appropriations and, as it is vitally important to the public health, should be supported generously by the people.

Owing to reported wide-spread frauds among cattle dealers, a situation of distrust in the Division of Animal Industry was created, and the Governor asked for the resignation of the Director, Dr. Lester H. Howard. This took effect on October 5, 1926. On November 6, Mr. Frank B. Cummings of Newton was appointed Director to fill vacancy.

For the work in detail, I refer to the report of the Division of Animal Industry.

CONSERVATION OF WILD LIFE.

In previous reports we have discussed the possible conflicts that may arise, from time to time, in an attempt to maintain, on a given area, both a State Forest and a wild life sanctuary. It has been pointed out that certain conflicts will arise that would make it very difficult to fully administer a given tract for both purposes. There is one possible field of development over which there is likely to be little conflict, if any at all. We refer to the development of the water resources on our State Forests for the propagation of fish life. The sites of old mill dams are to be found on some of our present forests, indicating that with a certain amount of construction work we can restore what were formerly sizeable ponds. In some of these instances the contour lines show, that if the dams are properly rebuilt it will be possible, from time to time, to draw all of the water out of the ponds, or, at least, down to the banks of any brook which may be a feeder supply. The presence of these artificial bodies of water within a State Forest will be of great value to forestry operations in supplying additional moisture to the forest in question. In time some of them may be valuable water supplies to fight fires on these forests and surrounding regions. They will also be a factor in beautifying the forests, which is always worth considering.

We have in our State upwards of eight hundred and fifty great ponds. Practically all of them are stocked with the common pond fishes, namely, bass, pickerel, perch and horned pout. In this list only the small-mouth

black bass can be artificially propagated in any reasonable numbers, by any of the usual methods employed through the country. If we are going to keep up a reasonable stock of fish in these great ponds it will be necessary, from time to time, to substantially stock them with the above species. At present our only source of supply consists of one chain of artificial ponds in which these fish propagate naturally, and from which, annually, sorted young stock is taken for planting in waters open to public fishing. As time goes on, and funds are available, it should be entirely practicable to develop a number of these breeding ponds on the State Forests, where fish cultural work and forestry can be conducted to all-round advantage. The greatest utilization of our forests, consistent with keeping fire hazards at a minimum and without encroachment on the areas suitable for growing trees, is one of our objectives in handling these problems of the conservation of all our natural resources.

STANDISH MONUMENT RESERVATION.

During the summer of 1926, a total of 100,720 persons visited the Standish Monument on Captain's Hill in the town of Duxbury. These visitors were from every state in the union and from many foreign countries. 9,131 ascended the tower, paying to the state \$913.10 for this privilege.

Repairs on the statue of Captain Myles Standish were completed as per contract, but when the time came for replacing the new upper half of the statue on the lower half, still standing on top of the monument, it was decided by the experts in charge that the lower half of the statue had deteriorated and was badly cracked, and not in a suitable condition to stand the weight of the new upper half. After consultation, it was thought best to ask for a new appropriation to repair the lower part, and await the action of the legislature of 1927 in regard to this matter. As the construction is to last for many years, it seems wise that it should be done properly now. The new upper part is safely housed, awaiting the further action of the legislature.

The need of a comfort station at this Reservation is still great.

STATE FORESTS.

The purchase of land has continued during the year. A total of 7,353.6738 acres has been acquired.

The land is distributed as follows:

<i>Name of Forest</i>	<i>Acres</i>
Myles Standish	35.
Savoy Mountain	200.
Ashburnham	23.
Conway	203.
Foxborough	381.385
Leominster	645.775
Martha's Vineyard	2,556.
Mohawk Trail	22.5
Monroe	281.
October Mountain	288.8
Peru	528.
Sandisfield	1,004.01
Shawme	143.31
Shutesbury	59.
Spencer	205.125
Sutton	25.
Templeton	290.74
Warwick	55.75
Wendell	83.39

Westminster	289.8888
Windsor	33.
Acquired by exchange	88.
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	7,353.6738

DIVISION OF ANIMAL INDUSTRY.

1. Salary of Director. Owing to the steady growth in the volume of business in this division, it is the opinion of the Commissioner that the director is not receiving a salary commensurate with his duties and responsibilities. The Commissioner, therefore, recommends that the salary be increased.

2. Amending the law relative to the tuberculin testing of cattle. Under the present law there is nothing to prevent a person acquiring cattle immediately prior to an application for a tuberculin test regardless of whether said person is the owner or not, or presenting cattle for test on premises other than those of said owner and thereby defeating the law the purpose of which is to *maintain* herds free from tuberculosis.

The present amendment requires that the person applying for the test shall have owned the cattle on the premises where tested for sixty days or have added them to his herd on proper test. The amendment also provides that an application for a tuberculin test shall be signed by the owner only. These measures should help to prevent fraud against the Commonwealth.

3. Amending the law relative to reimbursement by the Commonwealth for the slaughter of certain cattle affected with tuberculosis. During each of the past three years the Federal allotment for reacting cattle became exhausted. This exhaustion of funds apportioned by the Federal Government for payment to citizens of Massachusetts for cattle which react to a tuberculin test applied under the State and Federal co-operative agreement, deprives many Massachusetts cattle owners of Federal payment for such cattle regardless of the fact that said owners may have complied with the rules and regulations under which this test is applied. Failure of such payment is a hardship for farmers or cattle owners who are attempting to maintain herds of cattle free from tuberculosis. This act would remedy the possible lack of Federal funds and encourage cattle owners in the continuance of this work, by enabling the Commonwealth to pay the share of the Federal Government, when their appropriation became exhausted.

DIVISION OF FISHERIES AND GAME.

4. Salary of the Director. Owing to the steady growth in the volume of business in this division it is the opinion of the Commissioner that the Director is not receiving a salary commensurate with his duties and responsibilities. The Commissioner, therefore, recommends that the salary be increased.

5. An act to repeal the law relative to the training of hunting dogs. Under the present law dogs cannot be trained on any protected species of birds or game between March 1st and September 1st. This law does not prohibit the taking of fox hounds into the woods during this time (for the fox is given no protection by law), or other dogs under the guise of hunting unprotected game. It does not restrict the self-hunting mongrel dog which does a great deal of harm to birds and game. No practical scheme can be effected which would tend to keep all dogs out of the woods during the time that game should be unmolested. Therefore, it is unfair to restrict the bird dog and the rabbit hound and allow other dogs, which do more damage than any trained hunting dog, to run at will.

6. An act relative to fishing in inland waters. Today no license is required to fish in inland waters not stocked subsequent to January 1, 1910. While the greater part of such waters have been so stocked, the

law requires the publication yearly of a list of stocked waters at the expense of considerable effort and money for their compilation and publication. If the Commonwealth has expended substantial sums to stock waters prior to January 1, 1910 from which our fishermen are now receiving benefits, there is no logical reason for permitting these waters to be fished without the purchase of a license. This provision has cost the state many hundreds of dollars in loss of revenues from licenses; has made law enforcement difficult; and, wrought much confusion among the fishermen, and it should be repealed.

7. An act to permit the Department of Conservation to enlarge game farms and fish hatcheries. It was impossible to see years ago the desirability of enlarging some of our fish hatcheries and game farms. It is very possible in the future that desirable improvements at these stations will be blocked by reason of hold-up prices which certain persons owning adjacent lands are now in a position to demand. Therefore, it is important that the Department be given the right to take by eminent domain land adjacent to these stations, if such land cannot be purchased at a reasonable price, and if the land is necessary to make any needed improvements and extensions, or to protect the natural resources of the present stations.

8. An act relative to loch leven trout. While most people consider the brown and the loch leven trout to be one and the same fish, it is desirable to avoid any technicalities and to definitely state in the law that the loch leven trout shall receive the same protection as the brown trout now receives. Therefore, we recommend that the law be amended to give the loch leven trout specific protection.

9. An act relative to blue gills and sun-fish. The Division has expended considerable money for the propagation of the blue gill and several ponds throughout the Commonwealth have been stocked with this species with gratifying results. Therefore, a reasonable closed season, a legal minimum length, and a daily catch limit should be provided for blue gills and all other sun-fish, in order that they may have a chance to establish themselves in our waters.

PART II

REPORT OF THE DIVISION OF FORESTRY

The work of the Forestry Division is carried on in several sections, as follows: *general forestry work*, which includes educational work such as lecturing, preparing bulletins on forestry matters, forest survey of the state, examination of woodland with reports to owners, etc.; *nursery work*, including care and extension of nurseries, removing trees for planting on state owned land, or for sale to private woodland owners; *reforestation work*, that is, maintenance of lots deeded to the state under the so-called "reforestation act" (These lots when not redeemed at the end of ten years become the property of the state. There are many such state lots, and the work on them is described under the heading of "State Plantations"); *forest fire prevention work* in charge of the State Fire Warden, the aim of which is to detect and check forest fires in their incipency; *gypsy moth suppression* in charge of a superintendent who supervises the work done in the cities and towns of the state; and the *state forest work*, both purchase and development of forest lands. This includes planting, thinning, road building, fire lines, surveying, establishing of forest nurseries, repair of buildings, leasing of camp sites, etc.

These different lines of work have been prosecuted faithfully during the past year.

ORGANIZATION.

WILLIAM A. L. BAZELEY, Commissioner and State Forester

CHARLES O. BAILEY, Secretary

HAROLD O. COOK, Chief Forester

D. C. A. GALARNEAU, Forester in Western Massachusetts

FRANK L. HAYNES, Asst. Forester, Land Purchase

JAMES MORRIS, Asst. Forester, Nurseries

ROBERT B. PARMENTER, Asst. Forester, Mapping and Reforestation

MAXWELL C. HUTCHINS, State Fire Warden

GEORGE A. SMITH, Moth Superintendent

JOHN P. CROWE, Asst. Fire Warden

District Forest Wardens

District Moth Superintendents

1. James E. Moloy, Woburn
2. John H. Montle, Fall River
3. Wm. Day, Wareham
4. Chas. L. Woodman, Manchaug
5. Albert R. Ordway, Westfield
6. Jos. L. Peabody, Winchendon
7. Verne J. Fitzroy, Savoy
8. Lincoln Crowell, Sandwich

1. Michael H. Donovan, Beverly
2. William A. Hatch, Marlborough
3. John J. Fitzgerald, Haverhill
4. Clarence W. Parkhurst, Foxboro
5. Walter F. Holmes, Buzzards Bay
6. Harry B. Ramsey, Worcester
7. Grover C. Twiss, Holyoke

STATE PLANTATIONS.

Seven new reforestation lots were planted, two unfinished lots completed, three lots filled in and two lots replanted after fire had destroyed the former plantation. During the months of April and May 213,000 trees were set out and in the fall 13,100 more were planted. These plantings have all been successful, and soon will change the looks of the idle, cut-over land which the state has purchased.

Liberation or release cuttings have been made on twenty-two reforestation lots and *ribes* pulled from three lots that were found to be badly infected with blister rust before planting. We have many lots that are badly infected with the blister rust and this coming year it is the intention of the department to eradicate all the *ribes* in the lots and in the immediate vicinity. We recommend that all prospective buyers of white pine planting stock look over their land thoroughly before planting, and

pull out all the *ribes* found. This will insure protection to the young plants. The following list shows the lots that have been worked on during the past year, together with the location, and the kind of work done.

Flint, Andover—5,000 trees planted and 40 acres liberated.
 Fenno, Westminster—36 acres liberated.
 Holway, Sandwich—24 acres liberated.
 Bishop, Hubbardston—30,000 trees planted.
 Sohier, Rowley—8½ acres liberated.
 Weeks, Sandwich—20 acres liberated.
 Stone, East Brookfield—6,000 trees planted.
 Glebe, Hopkinton—6,100 trees planted, 40 acres liberated and 5 acres brush disposal.
 Jacobs, Wellfleet—8 acres liberated.
 Crowell, Dennis—20 acres liberated.
 Cadwell & Glazier, Leverett—90 acres liberated.
 Rhea, Boxford—10 acres liberated.
 Smith, Barnstable—17 acres liberated.
 Browne, Marlboro—33 acres liberated.
 Simpkins, Yarmouth—62 acres liberated.
 Crocker, Barnstable—32 acres liberated.
 Leonard, Raynham—12,000 trees planted.
 Churchill, Berkley—12 acres liberated.
 LeClear, Brewster—18 acres liberated.
 Bazeley, Uxbridge—7,000 trees planted.
 Ross, Montague—7,000 trees planted.
 Baker Box, Barre—20,000 trees planted, 10 acres brush disposal.
 Hardy, Ashburnham—57,000 trees planted.
 Howe, Princeton—20,000 trees planted, 630 *ribes* pulled.
 Houghton, Princeton—25,000 trees planted, 4,434 *ribes* pulled.
 Rugg, Princeton—11 *ribes* pulled.
 Estabrook, Rutland—30,000 trees planted.
 Vinal, Norwell—11,000 trees planted.
 Rockwood, Ashburnham—50 acres liberated.
 Baker, Warwick—20,000 trees planted.

The total number of trees planted amounted to 226,100, 573 acres were liberated and brush from 15 acres disposed of.

FOREST SURVEY.

The work of completing the forest and land survey of the entire state is nearing an end. The past year we were able to finish Hampden County and nearly the entire county of Middlesex. This coming year it is the intention of the department to complete Middlesex and finish Barnstable County. We hope to have the entire state ready for publication within two years time. This work is accomplished in the summer time with the help of students from forestry colleges.

A close study of the marketing possibilities is carried on at the same time and with this information on hand, the department feels that valuable aid can be rendered the woodland owners and others. Since the farm woodlot is one of the best assets to the state, it is of vital importance that the best markets be obtained for the material cut from these woodlots.

EXTENSION FORESTRY.

The Clarke-McNary bill passed by Congress in 1924 provides for co-operation between the Federal Government and the States in different lines of forestry work, one of these being "farm forestry extension" which means the education of the farmer and the small woodlot owner in the management of his wood and waste lands. In this state the work is in charge of the Agricultural Extension Service at Amherst, but through the co-operation of the Director for this state, Mr. Willard Mun-

son, two of the foresters of this department, Mr. Cook and Mr. Parmenter, act as the extension specialists in forestry. All educational work of this department and contacts with private owners is classed as "extension work" and is carried out as far as possible in co-operation with the county extension services. Following is a brief summary of our efforts along this line.

WOODLOT EXAMINATIONS.

The most practical way of educating the private owner is to get him out in his own woodland and there point out to him on the ground the problems involved and the plan of management which should be pursued to meet them. When this work is done for an individual owner he is charged only the traveling expenses of the visiting forester. In western Massachusetts these expenses are figured from Springfield. If the owner through the county agent arranges for a demonstration and invites in a group of friends and neighbors, no charge is made even for traveling expenses.

Following is a list of these examinations and demonstrations made during the past year, classified according to the principal problem involved.

<i>Problem</i>	<i>Number</i>	<i>Acres</i>
Thinnings and Improvement Cutting	10	1,050
Forest Planting	15	3,680
Insects and Diseases	7	95
Marketing	6	8,372
Taxation	3	180
	<hr/> 41	<hr/> 13,377

LECTURES.

Interest in forestry is shown by the numerous requests for lectures on the part of granges, men's clubs, women's clubs, luncheon clubs and kindred organizations. During the past year 85 such lectures were given and three talks broadcasted from the radio stations WNAC, WBZ and WEEL.

The following meetings outside of the state were attended by representatives of this department:—

Southern Forestry Congress, Richmond, Virginia.

New England Foresters, Middlebury, Vermont.

Association of State Foresters, Baltimore, Maryland.

Extension Forestry Conference, Washington, D. C.

Rhode Island Fish and Game Association, Providence, Rhode Island.

FIELD TRIPS.

The forestry committee of the Worcester County Farm Bureau arranged two field excursions in November, one in the southern and one in the northern part of the county, for its members. About 25 people took part in these excursions and they were much interested in seeing the reforestation and improvement cutting work being done. It was not state work but private land which was shown on these occasions. We hope that other county extension services may arrange similar excursions.

EXHIBITS.

At the Eastern States Exposition we co-operated with the Department of Agriculture in providing a forest background for their exhibit on horticulture and gardening. Forestry exhibits were made at the Oxford and Northampton Fairs and at the Mail Advertising Convention in Boston. Small exhibits were set up for the Great Barrington Garden Club and the Orange Woman's Club. We acquired this year three forest fire

transparencies which are so arranged that a celluloid cylinder inside, revolving from the heat of the electric lamp, gives the impression of moving flames and smoke, and is quite impressive. During the forest fire season these transparencies were placed in store windows with appropriate posters and setting, and form a striking educational feature which can be easily moved and which has nothing to get out of order. The stereomoto-graph with its colored slides was as usual loaned to libraries for periods of from two to three weeks.

BLISTER RUST WORK.

The white pine blister rust, a plant disease which causes serious damage to white pine trees, and is transmitted through the agency of currant and gooseberry bushes, has become generally distributed throughout the Commonwealth. Blister rust was first discovered in Massachusetts in 1917, and to date,—November 30, 1926, the disease is known to be present in 210 townships in the State. The degree of infection naturally varies from the single tree or "spot" type to areas of general infection and small plots where the disease has already inflicted serious injury.

In an effort to prevent the further spread of the disease, the Massachusetts Department of Agriculture has been designated to conduct an intensive state-wide campaign of education and service in co-operation with the United States Department of Agriculture. The purpose of this campaign is to disseminate information regarding the disease, and to secure the concerted action of all concerned, to promptly eradicate wild and cultivated currant and gooseberry bushes wherever they may be endangering valuable white pine trees. The ultimate aim of the campaign is to secure the voluntary action of property owners in permanently protecting their white pine trees against this disease, just as they protect their vegetables and fruit crops against the inroads of other pests.

As a result of successful interviews with property owners throughout the State, 1,845 individuals actually eradicated currant and gooseberry bushes from their lands, during the season of 1926. These owners uprooted 1,083,039 wild bushes, and sacrificed 25,596 plants under cultivation. This control work involved the thorough examination of 189,080 acres of land, 78,427 acres of which is producing a crop of white pine. The average cost of this control work was 14c. per acre.

NURSERIES.

During 1926 there were shipped from our nurseries 3,540,724 young trees. This stock was distributed as follows:—

Sold	1,396,674
State Forests	1,193,675
Reforestation Lots	215,500
Town Forests	303,050
State Institutions	415,675
Boy Scouts	16,150
	<hr/>
	3,540,724

The new nursery at Clinton has been partially developed and now contains 1,406,000 transplants. We expect to add a like amount during this current year and plan to increase the amount yearly until there are 5,000,000 transplants there with an annual shipping total of two and one-half million plants.

We are decreasing the product of our reservation nurseries to correspond with the increase at Clinton, feeling that for the present at least an annual distribution of 4,000,000 plants will be sufficient to take care of private demands and our own projects.

STATE FORESTS.

The work of maintaining and developing the state forests has continued during the year as far as funds permitted. As road construction and building of fire lines has progressed, it has become possible to put increasing attention on the silvicultural treatment of the growing forests. Although our state forests are made up for the most part of lands which have been cut over and abandoned farms, a condition made necessary by the \$5 per acre limit on the price of the land, nevertheless there are scattered portions containing merchantable timber and cordwood and whenever feasible, we are turning this material to use and so producing some income. We hope that this income account will increase from year to year as the growth on the forest becomes more and more valuable.

Arthur Warton Swann Forest. An improvement thinning in mixed hardwood growth was made with a resulting product of 23 cords of wood. Planting included the setting of 13,600 trees and 96,000 seedlings set in the nursery. The older pine plantations (86 acres) were gone over for pine weevil eradication. Twelve acres of young mixed hardwood growth was weeded. One mile of main road was repaired. Two miles of forest trail were maintained and one and one-quarter miles of new trail built. Only minor repairs were made to the buildings.

Ashburnham Forest. Slash was piled and burnt on 10 acres of cut-over land and release cutting of planted pine done on about 90 acres.

Beartown Forest. Beartown reforestation work was continued by the planting of 82,000 spruce and one and one-half miles of trail were opened up.

Blandford Forest. Made a fire line along the railroad and cleaned up slash by the side of the state road. Burnt up two sets of abandoned buildings.

Colrain Forest. Planted 8,000 trees, brushed out forest roads. About 42 pines in the older plantations were found to be infected with blister rust, so it was decided to eradicate the currants and gooseberries from the forest. About 10,000 plants were pulled on an area of 2,000 acres. The Department of Agriculture handled this work for us.

Erving Forest. During the winter the crew cleaned up an area of dead chestnuts, taking out 330 posts and 75 cords of wood. The mountain road was cleared of stone and made over for travel for one and one half miles. From the nursery 83,000 transplants were taken out and 100,000 seedlings were put in. The Hedberg property near the Erving Paper Mills was acquired as a headquarters house and put in shape for use. The Kurtz house proved to be so far gone that it could not be repaired economically, and was torn down.

Harold Parker Forest. About 15 acres of mixed pine and hardwood growth has been thinned and all but 12 cords of wood sold. About 5,000 young pines were set in openings left after this thinning. Considerable work was done in grading and repairing forest roads. A garage has been constructed at headquarters and a well dug for fire protection purposes.

Marthas Vineyard Forest. Brushed three miles of fire line preparatory to plowing, and cleared out two and one-half miles of wood roads. Planting was carried out, both during spring and fall, by the use of 104,000 transplants of Scotch, Spanish and Austrian pines, and the nursery with its 360,000 transplants was cared for.

Mohawk Trail Forest. Cleared brush in seven miles of forest road and planted 17,000 trees. Maintained the motor camping grounds and kept up a demonstration nursery.

Monroe Forest. Planted 10,000 spruce.

Myles Standish Forest. Planted 207,000 trees and 300,000 seedlings set in the nursery which has been surrounded by an eight inch fence to keep out the deer. Some 35 miles of old fire lines were brushed and harrowed and 3 miles of new line constructed. Several new camps have been erected at College Pond and a Girl Scout Camp has been built at Barretts Pond.

Automobile traffic to and from this forest increases yearly and is getting to be a serious problem, especially that coming via the long and narrow wood road leading in from Plymouth.

Mount Grace Forest. Ninety acres of planted land were given a liberation cutting and 50 acres of natural pine growth given the same treatment. It was thought that about all the chestnut growth killed by the blight at this mountain had been removed but scouting revealed the fact that a number of merchantable size trees still remain and arrangements were made to sell them to a local operator who has already started cutting.

October Mountain Forest. During the winter a strip of hardwood forest along the Washington Brook Road and the New Lenox Road was thinned, the resulting product amounting to 150 cords of wood. Much work was done on the roads by grading with gravel and cinders, new culverts put in and brush mowed in forest roads. Planting work comprised the setting of 230,000 trees taken from a local nursery. Only a few seedlings were transplanted to the nursery. Some changes were made in both the upper and lower headquarter houses including the installation of two bath rooms, practically all the material for these repairs coming from the old Whitney mansion. The Whitney mansion and stables were turned over to the Division of Fisheries and Game to be torn down and the salvaged material to be used by them for construction purposes at their game farms or hatcheries. We saved the Honeymoon Cottage and the water tower and the latter was put in shape for fire observation purposes.

Otter River Forest. Liberation cuttings were carried on in red and white pine plantations totaling 70 acres and some thinning work done in natural pine stands. Planting work included the setting of 26,000 Japanese red pine. The nursery on this forest has become an important institution so that 334,000 transplants were taken from it and 680,000 two-year seedlings were set in. A little road work was done and minor repairs to buildings made. This state forest was unfortunate in suffering from a fire set by the Boston and Maine Railroad which burnt nearly 100 acres of land, reforested 7 years ago. The Railroad settled for the damage.

Savoy Mountain Forest. Cut 50 cords of wood in section where trees were badly damaged by the ice storm. Repaired 7 miles of forest roads and cut brush on two miles. Planted 80,000 trees and maintained the two small transplant nurseries.

Shawme Forest. (Cape Cod.) The most important factor on this forest is fire protection and for this reason two and one-half miles of 50-foot fire line have been constructed, and one mile of 20-foot fire break. In addition brush was cut at the side of 6 miles of forest growth. Reforestation work was accomplished by the use of 164,000 trees and one and one-fourth acres of brush land cleared for use as a transplant nursery.

Templeton Forest. Fredette lot was reforested with 40,000 spruce and 33,000 pines were planted on the Hadley lot.

Tolland-Granville Forest. Planted 70,000 pine on south section and 30,000 on the north. Moved brush on 14 miles of forest roads and trails and along 2 miles of main road. Made some repairs on headquarters buildings. Fenced up seven old wells. Liberated natural pine growth from grey birch on about 10 acres of land.

Wendell Forest. Planted 41,000 trees and cleared the brush on several miles of road. Some liberation cutting in planted stands was done.

Windsor Forest. Planted 240,000 trees principally spruce and stretched a wire cable fence along the east of the precipice overlooking the Jams to prevent visitors from falling over. The auto parking grounds were patrolled and kept clean.

AREA OF THE STATE FORESTS, NOVEMBER 30, 1926.

<i>Name of Forest</i>	<i>Acreage</i>	<i>Name of Forest</i>	<i>Acreage</i>
Arthur Warton Swann	986.75	Oakham	504.05
Ashburnham	1,078.075	October Mountain	13,652.6
Barre	233.5	Otis	2,772.81
Bash Bish	390.08	Otter River	1,812.46
Beartown	7,399.93	Oxford	28.7
Blandford	1,419.5	Peru	1,588.
Brimfield	463.5	Petersham	248.15
Clarksburg	1,764.	Pittsfield	1,082.54
Colrain	1,206.194	Sandisfield	3,998.76
Conway	1,489.12	Savoy Mountain	7,116.98
Erving	4,431.565	Shawme (takings)	8,422.12
Foxborough	381.385	Shutesbury	638.36
Harold Parker	1,327.6	Spencer	625.125
Hawley	1,523.	Sutton	234.5615
Hubbardston	724.37	Templeton	377.5
Leominster	1,283.475	Tolland-Granville	4,577.
Marthas Vineyard (takings)	4,472.75	Warwick	960.45
Mohawk Trail	5,273.6	Wendell	4,251.86
Monroe	2,762.57	Westminster	540.8388
Mount Grace	1,065.825	Windsor	1,450.05
Myles Standish (inc. taking)	8,869.	Worthington	225.
Northfield	235.4875	Unassigned	1,093.325
			<hr/> 104,982.5168

REPORT OF THE FORESTER IN WESTERN MASSACHUSETTS.

MR. W. A. L. BAZELEY, *State Forester*.

SIR:—The following is a detailed report of the forestry work pursued through the Springfield office of the Forestry Division during the fiscal year ending November 1926.

*Introduction**General Statement*

The establishment of an office at Springfield has stimulated an interest in forestry in the western section of the state, and has made it possible to pursue more effectively the forestry work on the state forests located in the four western counties. The service rendered to the people is already appreciated, and the field of endeavor covers a wide scope of forestry subjects. In general the work may be considered under two heads: first, forestry in connection with the state forests; secondly, extension forestry which includes service rendered to the individual or groups of individuals. While more time is now given to the state forests, the extension work is rapidly increasing.

Headquarters

Through the courtesy of the Hampden County Improvement League, and the approval of its president, Mr. H. A. Moses, adequate office space, stenographic service, and telephone have been provided, without charge, in the new League Building, a gift from its president, accessibly located in West Springfield. This arrangement makes it possible to conduct the Department's business in an atmosphere of friendly co-operation.

Personnel

The immediate force connected with this office consists of myself in charge of the work under instruction from the Chief Forester in Boston, and one permanent man, R. M. Hick, Forest and Type Surveyor, working under my personal direction. Such other help as has been required has been engaged for limited periods.

FORESTRY ON STATE FORESTS

General Statement

The total area of the State Forests comprises 104,982.52 acres of which 73,180.5 acres or 69.7% of the entire area are located within the four western counties. For this reason this office is primarily concerned with the silvicultural work on the state owned lands. This work includes forest and type surveying, planting, release cuttings, improvement thinnings, logging, blister rust eradication, insect attacks, and studies. In addition other miscellaneous work includes: the examination of lands for purchase, examination for special privileges, investigations of trespass, infringement of cutting rights, and special investigations. As yet, no trained foresters have been employed as superintendents on these state forests, but the present force of superintendents under proper instruction and guidance has been able to carry out such silvical operations as have been assigned.

Forest and Type Surveying

In order to properly manage and develop the state forests it has been necessary to survey the conditions as they exist within the boundaries of each forest. Through a method of survey the land has been subdivided into types in accordance with the distribution of growth found. The location of the various types has been indicated by lines and symbols on maps of convenient size. In order to make the types more comprehensive these maps have been colored, each type being represented by a separate color. In carrying on these surveys, data also has been secured relative to the composition of the growth by species, size and crown density; areas of cut, burned brush land, open land, and plantations have been located; and the location of streams, lakes or ponds, roads, buildings and other improvements have been noted. This information has likewise been added to the maps. This work has been in progress for the past three field seasons, and now that adequate office space has been acquired in the new building of the Hampden County Improvement League, the field data have been compiled, and sixteen colored maps covering a total of 21,627 acres together with other data relative to area distribution and composition of the forest growth have been submitted for your consideration. Progress is being made on additional data covering 12,317 acres. When this is completed, 33,944 acres within the Erving, Mohawk Trail, October Mountain, Otis, Peru, Sandisfield, Savoy, Tolland-Granville, and Windsor state forests will have been surveyed in the manner described. It is well to note that most of this work has been done by one regular crew of two men with such assistance as I have been able to give. Only during a period of three months in 1924 were two regular crews of two men each available.

Not only are the maps and data of these surveys an advantage to the forestry developments of these forests but they will be of great benefit in their protection from fire, in the locating and maintenance of roads, and in the construction of other permanent improvements.

Mr. A. F. Hawes, State Forester of Connecticut, has studied with me our method of survey, type distribution, compilation of data, and map colors with a view to using a similar system in his state forest acquisition work in Connecticut.

SUMMARY OF COMPLETED TYPE SURVEYS

DISTRIBUTION OF AREA ACCORDING TO FOREST TYPES.

	<i>Acres</i>	<i>Per cent</i>
Softwood	571.4	2.64
Softwood-Hardwood	1,450.7	6.71
Hardwood-Softwood	2,375.3	10.98
Hardwood	8,401.1	38.85
100% open land	705.5	3.26
50-90% open land	775.1	3.58
Under 50% open land	80.2	.37
Plantation	980.9	4.53
Brush	1,932.0	8.94
Recent cutover	1,951.5	9.02
Old cutover	1,697.3	7.85
Cut and burn	61.4	.29
Burn	242.5	1.12
Swamp	169.7	.79
Water	115.7	.53
Roads	116.7	.54
Totals	21,627.0	100.00

A few interesting facts have been drawn from the results of these surveys. On a basis of 21,627 acres, the figures show that 59.18% of the area is timbered. This large percentage is due to the area of 12,799.7 acres in the October Mountain Forest, 75% of which is timbered, yet eliminating this forest, 35.6% of the balance of the total area covered contains timber. 980.0 acres or 4.53% have been planted and one-half of this only partially plantable. 16.87% has been cut over in recent years. This would indicate that the areas as a whole are fairly free from inflammable debris resulting from cutting operations. Noticeable evidence of recent fires has been found on only 1.41% of the area showing that the fire risk has been low in the sections in which these state forests are located.

Planting

As in the past, the planting of the open lands on the state forests in the western district has continued and 752,200 trees have been set.

Assistance was rendered to the superintendent of the October Mountain Forest in locating areas to be planted and the plantings were later inspected.

Again referring to survey data, there is only 3.26% of open land on these 21,627 acres and but 3.58% of partially open land. This is indeed small as compared with the whole area and is contrary to the general supposition. The program of planting these open areas as soon as possible is justified, since brush and bushes are continually spreading over the partially covered areas and undesirable conditions are gradually appearing on some of the wholly open lands. With only 7.84% of plantable area it will be but a short time before planting will be secondary on many of these forests and practically all the time may be spent in the development of the more advanced growth.

Thinning

During the past year a considerable amount of material was removed as thinnings in some of the more valuable hardwoods in two sections on the October Mountain Forest. Too short a time has elapsed to note any direct benefit to the trees left, but the stands have been greatly improved

in appearance. The wood removed was made into cordwood which has been sold. Some thinnings were also made on the Erving Forest.

Logging

A small amount of ash and oak has been cut on the October Mountain Forest. The cutting and hauling to the main road was done by our own men, and the timber was sold in the log delivered to the road.

Blister Rust Eradication

Although no eradication crews were maintained in the field except in Colrain Forest as in the past, a constant watch was kept for the presence of blister rust on the white pine while in the woods. Blister rust was found within the Mohawk Trail Forest and the Savoy Forest. This has been reported to the Boston office and to both the Blister Rust Agents in Berkshire and Franklin Counties. Further examination should be made of these areas, and eradication crews should be placed in the field during the coming summer in order to prevent further spread of this disease.

It was possible to co-operate with the Blister Rust Agent in Hampden County who has a place in our office in the Hampden County Improvement League Building.

Insect Attacks

A trip has been made over a number of the state forests in Franklin County with a representative of the Federal Gypsy Moth Laboratory at Melrose Highlands for the purpose of ascertaining the condition for the establishment of several sample areas on which to observe the work of the gypsy moth. Places were noted where conditions were favorable for such a study, and the desired areas have now been selected within the Erving Forest.

Miscellaneous Work

Examinations have been made of two parcels of land offered for purchase for state forest purposes. Both parcels were too detached from other state land to be acquired.

On the request for a special privilege to pipe the overflow water of a spring on the Worthington Forest to a wayside stand on private land, an investigation was made and a report submitted for your consideration.

A report has been submitted relative to the cutting in trespass of 4½ cords of wood on the Blandford Forest. When definite instructions were received from Boston as to how to proceed, the trespassers had left Springfield, and could not be found. A power line has since been built through the area cut over, and the timber would have been cut for this purpose.

In accordance with instructions, I attended the trial of Alfred Atmore Pope Foundation, Incorporated vs. the New York, New Haven & Hartford Railroad, at Hartford. The Pope Foundation asked that the railway pay \$100,000.00 for damages to its timber lands caused by a fire set by the railway, and further asked that the railway be required to use other than soft coal for fuel. Since many well known foresters were called as witnesses on both sides, the purpose of attending was to ascertain the kind of arguments used, the evidence admitted, and the judge's decision in order to be in a position to guide in the preparation of evidence in case of loss of state property from a similar cause. Notes were taken and these are available.

EXTENSION FORESTRY

General Statement

Extension forestry embraces not only the education of the farmer and the woodlot owner in the management of his woodlands, but includes as well all educational work along forestry lines. In the western district

requests for service covering a wide field of forestry subjects are rapidly increasing. Since this office is with the Hampden County Improvement League, an organization dealing with agricultural extension work, and further since Mr. H. A. Moses, the League's president, is especially interested in forestry, this no doubt has stimulated an interest in forestry which has brought many demands for information and service from individuals, organizations, towns and cities in Hampden County. As this office is accessible in a large center of varying interests, and as I happen to have a knowledge of camp life and recreational activities, I have been able to fit into a number of these projects. Requests for information and service are not confined to Hampden County, but many come from the other three western counties. The work covered by extension forestry includes talks, examinations of land, planting, demonstrations, town forests, co-operation and exhibits.

Talks

During the year talks have been given to boy and girl scouts, boys' clubs, men's clubs, women's clubs, schools, and special meetings. The number of talks is given elsewhere in the report of the Division of Forestry.

Examinations

Advice to private owners relative to timber, woodlot management, and planting has been given through personal examinations. The number of these examinations is likewise given elsewhere in the report of the Division of Forestry.

Planting.

In co-operation with the Exchange Club of Springfield, 1,000 Norway spruce and 1,000 red pine have been planted on the Preventorium lands in Westfield owned by the Hampden County Tuberculosis Association. 5,000 trees have also been planted by the Boy Scouts at Camp John Robinson in Westfield.

Scouts

I have acted as forestry advisor to the Hampden Council of Boy Scouts, have been a member of the Council, and have been a member of the camp committee assigned to Camp John Robinson. This camp consists of 65 acres of cutover lands which are being improved by planting and forestry practice. I have acted as merit badge examiner in forestry and conservation. An increasing number of boys have tried for badges in these subjects. I have been appointed wood-craft instructor for the Holyoke Boy Scout Council.

At the New England Camp Conference of Boy Scouts, held at Springfield, I held forestry conferences where I was able to advise several executives both from in and outside of the state regarding the forestry possibilities on their camp sites.

A group of Girl Scouts has been taken on a field trip through Forest Park, Springfield, and these girls were instructed in forest, ornamental and shade tree planting, and also in the pruning of shade trees.

Town Forests

Already nineteen towns in the four western counties have established town forests, and more are assured for the coming year. The size varies from less than 100 acres to whole watersheds of 2,500 as in the case of Russell. Besides the offer of the Massachusetts Forestry Association to plant 5,000 trees on established forests of 100 acres or more in Berkshire County, three influential men add to this offer \$150.00; in Franklin County the New England Box Company donates \$50.00; and in Hampden County the Hampden County Improvement League jointly with the Cham-

ber of Commerce gives \$50.00 to the first six towns complying with this requirement during the year. This shows the interest being taken to encourage towns in the town forest movement. This department likewise does its share. Meetings have been attended, talks given, examinations made, and advice given as to the establishment and development of town forests. In advising with the Russell town forest committee it was decided that the town would plant 30,000 trees annually for a period of ten years. On my vacation in eastern Massachusetts I have also acted as chairman of the Scituate town forest committee, being responsible for the purchase of the first area of 24 acres which contains 2 acres of white pine. Fifteen acres of slash have been cleaned up, and that portion of the area not containing a good stand of reproduction is ready to be planted.

Cities and Towns

In conjunction with the development of a park system in Springfield, a tract of land has been examined for the Planning Board. In co-operation with the forester for the Springfield Park Department several plantations have been examined as well as a number of shade trees. An interest has also been taken in the moving of large trees.

Several shade trees have been examined for the city of Pittsfield, and advice given as to their treatment.

The town of Easthampton has also been advised regarding the pruning, repairing, and general care of its shade trees.

Co-operation

I have been a member of the Forestry Committee of both the Chamber of Commerce and the Hampden County Improvement League. These committees have been meeting jointly each month, and the members have been anxious to help in forestry matters. An outline has been prepared pointing out how the committee might function to advantage in Federal, State, and local forestry movements.

The Directors of the 14th and 15th Districts of the Federation of Women's Clubs have created such an interest in forestry among their individual clubs that a plan has been devised to raise money to buy land to build up and maintain a District Forest for a period of at least forty years. An estimate has been prepared for them of the cost per acre which will be required to do this. The individual clubs have been asked to subscribe money to buy an acre, or more or less. Several acres had been examined for the purpose but without success owing to the small size desired. Sufficient money had been secured to purchase 23 acres when Mr. H. A. Moses, taking an interest in the movement, came forth and made the women a gift of 33.64 acres located within his farm in the section which he is to develop along forestry lines. This gift insures the success of the project, and steps are under way to plant in the spring. Such a move will surely add greatly to the interest in forestry.

To establish a more definite and uniform study of trees in the rural and urban schools, several meetings with the Hampden County School Superintendent have been attended to discuss the subject. A committee has been appointed and considerable amount of data has been submitted to it. While there is an interest in the possibility of the work, no definite plan of action has been suggested by the committee. The Nature Study director in the Springfield schools was persuaded to call the teachers under her supervision for a conference. As a result of this discussion and with the co-operation of the Park Department, two acres of land in Forest Park were prepared and set aside as a school nursery. Two thousand trees, of different species and ages, were secured from the state and 150 children took part in the first planting in the nursery. Small plots are to be set aside for nursery beds at all schools where land is available. In

the school nurseries it is planned to study the development of the little trees from the seed up.

It has been suggested that the older children working from the different schools might make a census of the street trees of Springfield. This work might have to be supplemented by assistance from the Boy Scout troops in the city. A plan is being contemplated, and if it seems feasible and the teachers are sufficiently interested, it will be undertaken.

Eight hundred Forest Primers have been secured from the American Tree Association for distribution in the Springfield schools, and an additional 700 will be distributed in the schools in other places.

The Hampden County Improvement League has been formulating plans to introduce forestry to the farmers as a part of good farm management, and to reach the boys and girls through its 4-H Club leaders. Conferences have been held with the Managing Director and the Club Agent Leader to render any assistance possible.

Through a suggestion made to the Convention Manager of the Chamber of Commerce the Second New England Forestry Congress was held at Springfield in December last under the auspices of the Massachusetts Forestry Association.

Exhibits

During the year our department had exhibits at the Eastern States Exposition, in Springfield, at the Three County Fair in Northampton, and at the Second New England Forestry Conference in Springfield.

Early in the year the Department of Agriculture signified its desire to have the co-operation of the Division of Forestry in its plan for exhibiting flowers and nursery stock in the state building at the Eastern States Exposition. This necessitated giving up the Division of Forestry wing and confining our efforts to the building of a mountain with green timbered slopes through which flowed a stream. This mountain located at the rear of the building, formed the background of the entire exhibit. To lend distance, a painted drop hung on the rear wall, and the stream appeared as the outlet of the lake painted on the drop. The stream after flowing through the mountain cascaded over the rocks into a lake some ten feet below. The foreground of the building was laid out in beds containing different varieties of flowers and evergreen nursery stock. The arrangement was planned by a landscape architect to represent a formal garden, and the effect was greatly admired by the throngs passing through the building.

A small space was retained in the forestry wing of the state building where boxes containing 1, 2, 3, and 4 year white pines were shown. The electrical fire scene was also on display here.

At the Three County Fair in Northampton our exhibit was allotted but a small space with the White Pine Blister Rust display. Boxes of 1, 2, 3, and 4 year white pine, the electrical fire scene, and some framed pictures were exhibited.

At the Second New England Forestry Conference in Springfield, our exhibit consisted of the stereomograph machine showing the story of forestry in Massachusetts, a number of logs of the commercial species in this section, and some pictures.

The electrical fire scene has been on display in a store window in Springfield during American Forest Week and later, during Fire Prevention Week, it has been in a store window in North Adams.

Respectfully submitted,

D. C. A. GALARNEAU, *Forester.*

REPORT OF THE STATE FIRE WARDEN.

MR. WILLIAM A. L. BAZELEY, *State Forester*.

SIR:—In compliance with the provisions of section 26, chapter 48 of the General Laws, I submit herewith a report of the work accomplished by this branch of the division during the year just ended.

With the exception of our usual drought during the spring months the season has been a very favorable one. During this period we had several disastrous fires that burned over extensive areas and caused heavy damages. These fires were confined mostly to southern and eastern Massachusetts and while some were deliberately set most of them were roadside fires caused by carelessness. During the year we have had 2,860 fires burning over an area of 34,675 acres with a cost to extinguish of \$61,030 and a damage of \$163,668.

In our endeavor to eliminate second-day fires we have continued to have the co-operation of the various wardens with the result that out of our total number of fires we have had but thirty-six second-day fires. Such fires can be prevented by careful control during the night and a suitable patrol to follow up during the day. This control of the fires was largely made possible by the use of our power pumps which are especially constructed for forest fire work. These small pumps can be carried into the woods to the nearest water and are capable of supplying 3,000 feet of one-inch hose. The value of these pumps was demonstrated at a serious fire in Sudbury where the use of two of them saved buildings valued at \$40,000. This is but one incident of many where these pumps proved their value. Many towns will find it to their advantage to equip themselves with power pumps and motor apparatus for transporting men and equipment to fires.

A new 68-foot forest fire observation tower was erected in the town of Holbrook at a cost of \$2,000. This station is one of the most important ones in the state as it covers a large area of inflammable and dangerous territory that has always been subject to fires. The towns of Abington, Avon, Holbrook, Randolph, Stoughton and Weymouth contributed \$1,250 to the cost of this tower.

Several of our towers have been repainted and the telephone lines brushed out and repaired. The Manchester tower was completely overhauled and a new building constructed at the top.

We are using every precaution possible to protect our state forests from the ravages of forest fires. In our holdings in western Massachusetts we are clearing out old roads, disposing of all brush following cutting operations and making all water-holes, rivers and ponds accessible in case of fire. On our state forests throughout central and eastern Massachusetts we have a much more dangerous condition and this is especially true on our state holdings in Barnstable, Plymouth and Dukes counties. Here we find it necessary to cut our areas up into 200-acre tracts with a fifty-foot fire line around each one. These fire lines have a road through the center and a ten-foot plowed strip at the extreme outside edge making it possible to confine a fire within a given area.

The railroad fire situation remains practically the same as last year, there being about twenty-two per cent of our fires attributed to this cause.

The Fish and Game Division of this department has, through its educational work among the members of the various fish and game clubs throughout the state, been able to create a spirit of co-operation in the prevention of forest fires. In past years hunters and fishermen were charged with the responsibility of many of our fires. During the past year the number of fires attributed to this cause has been almost negligible.

The automobilist and careless smoker are responsible for a large percentage of our fires. This condition does not improve, in fact, more fires were attributed to this cause this year than in previous years. The drop-

ping of lighted matches or cigarettes and the throwing of them from automobiles is a habit that smokers have acquired and when we can correct this habit we shall eliminate the chief cause of our fires. It may be necessary to have legislation enacted to accomplish this result.

In connection with this need for education and information of the public, we include here a copy of the report submitted to the General Court relative to the value of an experiment which has been carried on in certain towns during the year ending November 30, 1926.

Department of Conservation, Division of Forestry,
State House, Boston, November 22, 1926.

To the Clerk of the House of Representatives, State House, Boston,
Massachusetts.

SIR:—In compliance with the provisions of Chapter 30 of the Resolves of 1926, I submit the following report.

In accordance with provisions of this resolve an experiment is being carried on to determine the value of education and patrol in the prevention of forest fires. There are three co-operating agencies, the United States Forest Service, the Massachusetts Forestry Association and the Massachusetts Department of Conservation.

The area selected for the experiment consists of the towns of Bourne, Barnstable, Falmouth, Mashpee, Sandwich and Yarmouth on Cape Cod. This district is recognized as having the highest forest fire hazard to be found in Massachusetts. In fact it would be difficult to find an equal area in the Eastern states that surpasses it in this regard. The pitch pine and scrub oak in mixture are the predominant species and both are highly inflammable. Fully fifty per cent of the forest area has been burned over at least once in the past twenty years and some sections have been swept by fire several times during this period.

Another reason for selecting this area is the fact that it is practically surrounded by water, there being tide water to the north, south and west, while on the east the Bass River practically cuts the Cape in half. For forest fire prevention this area may be considered an island because any fire occurring on it must have originated there since the possibility of fires spreading into this area from adjoining territory is very remote.

In order that detailed plans might be made for carrying on this experiment a meeting of representatives of the United States Forest Service, the Massachusetts Forestry Association, the Forestry Division of the Department of Conservation and the town forest wardens of the six towns was held at the State Forester's Office where definite plans were worked out and later put into operation.

The educational work was begun by the Massachusetts Forestry Association on the first of January. Its forester, equipped with motion pictures, bulletins describing the experiment and setting forth methods of fire prevention, posters and other educational material, spent months in the district giving talks to all the schools, boards of trade, women's clubs, fraternal organizations, civic associations, church clubs, and similar groups,—in fact to every kind of gathering where the showing of the pictures was possible. Conferences with individuals and small groups were held in every community. By the end of the three months practically every man, woman and child in the district knew about the experiment, and what each could do to help. The press devoted much space to the experiment, and the railroads, electric power companies and manufacturers pledged their hearty co-operation. As a climax to the work of the Association's forester, the lecturer of the United States Forest Service spent a week in the district giving special talks to selected groups.

As a part of the educational campaign carried on, a study was made of the woodlands to determine how the work of the fire wardens could be made more effective. It was found that many areas ranging from 1,000

to 4,000 acres contained no roads passable for vehicles, and a fire starting in the interior of one of these tracts could not be reached with fire apparatus until it had burned to the nearest road. It was decided to remove the brush and inflammable material from the old public and logging roads and to cut these large tracts into smaller ones averaging about 160 acres each. The estimated mileage to be brushed out in these six towns was 176 miles, and 120 miles of these roads were opened at an average cost of \$30 per mile, or a total of \$3,600, one-half of this expense being borne by the Massachusetts Forestry Association and one-half by the various towns in which the work was done. This expenditure should not be considered as a part of the cost of the experiment because it simply represents a result of the educational work.

Immediately following the educational campaign, the State Forester appointed two men who were familiar with the district to act as forest rangers. These men patrolled all the roads, visited camp and picnic grounds, distributed fire prevention literature, interviewed the occupants of all automobiles found parked in the woodland or along the roadside, saw that no brush or rubbish burning was done except under permit, reported all fires and the cause of the same, suppressed small fires discovered, disposed of fire hazards, so far as possible, such as paper and rubbish left on picnic grounds, inspected town dumps frequently, and kept the subject constantly before the public. These rangers were provided with Ford cars equipped with small truck bodies in which they carried a number of water cans with hand pumps, shovels and other tools for fire suppression. They wore distinctive uniforms and police badges. They personally attended 117 fires, travelled 28,000 miles and interviewed over 8,000 persons.

There have been 138 forest and grass fires this year as compared to 73, the average for the past three years. This increase of practically 90 per cent in the number of fires was due largely to the clearing of land in connection with the real estate boom and the presence of large numbers of people in the forests during the worst part of the fire season. This was a new factor in the fire prevention problem that was not present during the previous three years. Most of these people were non-residents and therefore it was not possible to reach all of them through the educational campaign.

The total area burned in the six towns this year was 3,771 acres, and the aggregate cost of the educational campaign, the patrol and the suppression was \$12,452, as compared with the average yearly records during the three preceding years of 9,363 acres burned and \$9,829 spent for suppression alone. This shows an increase in cost, for education, patrol and suppression, of \$2,623, or 26.7 per cent higher than for suppression alone, but a reduction in area burned of 5,592 acres, or about 59.7 per cent. In other words by spending one-fourth more under this system the loss in acres burned was reduced about three-fifths. This, however, is recognized as an exceptionally bad fire year, and when we compare the figures of this year with those of the worst of the three preceding years, which were 21,444 acres burned and a cost of suppression of \$9,924, we find that the cost has been increased by only 25.5 per cent, while the acreage burned has been reduced by 82.4 per cent.

The most encouraging feature of the whole experiment thus far is the change that is noted in public sentiment toward the fire problem. The people now have renewed hope that productive forests can again be established on Cape Cod. Greater interest in reforestation has been shown because of this determined effort to solve the fire problem. The towns have continued their appropriations for planting on town forests, the state is establishing a new nursery on the state forest and individuals have begun to reforest their idle lands.

In conclusion would say that this experiment has been very successful and in my opinion justifies the time and expense that has been applied to

it, and I would recommend that the experiment be continued during the next two years as was originally contemplated.

Respectfully submitted,

WM. A. L. BAZELEY, *Commissioner.*

The State Police have co-operated with us as far as their duties would permit. They have furnished very valuable assistance at many of our fires, have warned large numbers of the traveling public relative to the danger of camp fires and have ascertained whether parties burning were provided with the necessary permit for such burning.

Owing to insufficient funds we were unable to hold our forest fire conferences throughout the state as in past years. While an appropriation was made it did not become available until early spring when it was too late to hold the meetings and the balance for this purpose was allowed to return to the Treasurer. These meetings are very instructive and will be continued this coming winter.

The permit law has been enforced quite generally with satisfactory results. It was found necessary during very dry periods to have the wardens discontinue issuing them excepting for use on rainy days. While this met with some opposition it had the desired effect of reducing fire damages from this cause.

We have had some difficulty in enforcing the roadside slash law. Many tree wardens fail to see the importance of removing this brush at the time of cutting and in some instances it has been allowed to accumulate thus becoming a fire menace.

The co-operation we have received from the various power and telephone companies has been very gratifying. In nearly all instances they have disposed of their brush following cutting operations in a very satisfactory manner.

The co-operative work between the Federal Forest Service and our department has continued under the Clarke-McNary Law. The state allotment under this act was \$12,600.

The following tables show the comparative damages, costs, etc. for the past three years.

Respectfully submitted,

MAXWELL C. HUTCHINS, *State Fire Warden.*

COMPARATIVE DAMAGES BY FOREST FIRES FOR THE PAST THREE YEARS.

YEAR	Number of fires	Acreage burned	Cost to extinguish	Damage	Av- erage acreage per fire	Average damage per fire
1924 .	3,735	47,522	\$85,477.00	\$189,018.00	12.72	50.61
1925 .	3,310	43,876	66,855.00	194,741.00	13.25	58.83
1926 .	2,860	34,675	61,030.00	163,668.00	12.12	57.22

TYPES OF CLASSIFIED DAMAGES.

	1925	1926
Standing trees	\$108,894.00	\$83,998.00
Logs, lumber, cordwood	32,627.00	25,027.00
Buildings	33,260.00	35,981.00
Bridges, fences	1,768.00	1,427.00
Sproutland	18,135.00	16,550.00
Miscellaneous	57.00	685.00
	<hr/> \$194,741.00	<hr/> \$163,668.00

TYPES OF LAND BURNED OVER (ACRES).

	1925	1926
Timber	2,490	1,153
Second growth	7,827	5,528
Second growth, not merchantable	10,837	7,223
Brush land	17,181	16,550
Grass land	5,541	4,221
Totals	43,876	34,675

FOREST FIRES OF 1926.

Months	Number	Acres	Cost to Extinguish	Damage
1925				
December	70	200	\$517.00	\$572.00
1926				
January	26	97	206.00	539.00
February	4	6	7.00	
March	128	727	1,457.00	1,025.00
April	1,365	12,440	19,337.00	61,463.00
May	854	18,984	32,011.00	85,792.00
June	126	567	2,909.00	4,149.00
July	186	1,092	3,196.00	9,232.00
August	18	47	326.00	187.00
September	27	57	381.00	282.00
October	30	393	513.00	356.00
November	26	65	170.00	71.00
Totals	2,860	34,675	\$61,030.00	\$163,668.00

CLASSIFIED CAUSES OF FOREST FIRES, 1925-1926.

	1925		1926	
	Number	Per cent	Number	Per cent
Railroad	673	20.33	625	21.85
Lumbering	5	.15	2	.07
Brush burning	537	16.22	481	16.82
Campers	15	.45	10	.35
Incendiary	80	2.42	107	3.74
Miscellaneous	1,170	35.35	1,002	35.04
Unknown	830	25.08	633	22.13
Totals	3,310	100.00	2,860	100.00

RAILROAD FIRES OF 1926.

Railroad	Mileage	Num-ber of locomotives	Num-ber of fires	Acreage burned	Cost to extinguish	Damage
New York, New Haven & Hartford	1,937	1,088	462	3,521	\$7,869.00	\$29,227.00
Boston & Albany	970	344	44	308	667.00	1,170.00
Boston & Maine	1,959	1,048	108	869	2,279.00	10,565.00
Central Vermont	73	23	10	53	171.00	234.00
H. T. & W.	9	7	1	10	4.00	10.00
Totals	4,948	2,510	625	4,761	\$10,990.00	\$41,206.00

REPORT OF THE SUPERINTENDENT OF MOTH WORK.

HON. WM. A. L. BAZELEY, *Commissioner*.

SIR:—I have the honor to present a report of the gypsy and brown-tail moth work for the year 1926. In this report I shall touch on general conditions throughout the state, and make suggestions for the next season's work. I also wish to call your attention to a few matters which I fear are the subject of misapprehension on the part of some of our citizens, and hope that the publicity of this report may correct them.

As I reported last year, the apathy of cities and towns, the lack of sufficient appropriation, and the general feeling that the gypsy moth was no longer a serious pest, has allowed the gypsy moth to spread and increase in numbers again. Between fifty thousand and sixty thousand acres were defoliated or nearly so, much of this being woodland. A large part of this acreage was in the Cape Cod section, but additional new areas showed stripping.

A list of new towns in which stripping occurred this year is as follows: Attleboro, Avon, Berkley, Carver, Dartmouth, Dover, Dunstable, Easton, Fall River, Franklin, Groton, Hanover, Hingham, Hopkinton, Ipswich, Lakeville, Marlborough, Mattapoisett, Mansfield, Milford, Newbury, Northborough, Norton, Pembroke, Plainville, Raynham, Rowley, Sherborn, Southborough, Swansea, Topsfield, Truro, Tyngsborough, Upton, West Newbury, Westport, Wrentham.

A glance at this list will show the extent of the area badly infested this year. In addition to this, I must report that almost all towns have shown a marked increase in number of egg-clusters. Unless thorough and painstaking work is done this winter in creosoting egg-clusters, followed by thorough spraying in the spring, many more towns will show stripping next summer.

There is also a large block of about 36 square miles, comprising the towns of Groton, Littleton, and parts of Ayer, Shirley and Harvard, where the infestation is heavy.

There has not been much change in brown-tail moth conditions.

There seems to be a feeling on the part of the public that the Commonwealth is carrying a large force of men in the gypsy moth work. I wish this impression might be corrected. Besides myself, there are only seven division men, who supervise the moth work of the towns and cities throughout the state. All labor is furnished by the towns and cities and each has a local superintendent, appointed by the Mayor or Selectmen. The law gives this office the power of approval or disapproval of this appointment only. The assistance given by the state is in the form of reimbursement to the municipalities after they have duly spent under state supervision a certain amount set by law. This assistance goes to the towns having smallest valuation, only.

The experience of the last two years has proven that the help to be expected from insect parasites of the gypsy moth is only intermittent.

The co-operative work on the North Shore has been carried on as usual. A financial statement is given here:—

FINANCIAL STATEMENT.

SPECIAL NORTH SHORE FUND.

<i>Receipts.</i>	
Balance from 1925	\$1,145.44
State Forester	2,000.00
Wm. D. Sohier, Agent	2,000.00
City of Beverly	1,000.00
Town of Manchester	1,000.00
Wm. D. Sohier, Agent	313.01
Supt. of Buildings, State House	9.93
State Forester, for work done	366.33
	<hr/>
	\$7,834.71

Expenditures.

Salaries	\$4,226.15	
Travel	456.96	
Stationery & postage	2.13	
Telephone	88.47	
Freight & express	90.34	
Supplies	923.61	
Sundries	5.00	
Rent	260.00	
	<hr/>	6,052.66
Balance, November 30, 1926		<hr/> \$1,782.05

The elm leaf beetle has continued present on our street trees and necessitates spraying of the State highways. For this purpose and for the spraying of the trees for the gypsy moth, the Department of Public Works sets aside the sum of \$12,000.00.

The report of the United States Department of Agriculture in respect to the propagating and disseminating of parasites follows.

Respectfully submitted,

GEORGE A. SMITH, *Superintendent of Moth Work.*

FEDERAL GYPSY MOTH WORK IN MASSACHUSETTS.

By A. F. BURGESS.

Careful scouting and clean up work in Berkshire County, which comprises that portion of the barrier zone which lies in Massachusetts, has been carried on during the past year by the U. S. Bureau of Entomology. Conditions in this county have improved and a material decrease in infestation has resulted from the clean up and spraying work of the previous year. Fewer infestations were found in the spring of 1925, and these were thoroughly treated and spraying applied during the summer.

The inspection of products likely to carry the gypsy moth has been continued and the amount of material shipped outside the area quarantined for the gypsy moth has increased slightly during the year. The volume of Christmas trees and greens, including evergreen boughs, laurels, etc., cut for holiday and other decorations is much greater than during any previous year and the amount of inspection work required to safeguard this material which is being shipped to points outside New England increased considerably.

During the summer of 1925, three assistants from the gypsy moth laboratory were employed in Europe to secure and ship parasites to this country. Messrs. R. T. Webber and P. B. Dowden worked in Hungary, Czechoslovakia and Poland, while Mr. S. M. Dohanian carried on similar work in Spain and Portugal. During the early summer Mr. T. H. Jones made a special trip to Europe to receive shipments that were assembled and bring them to this country. This was necessary because the parasites involved in these shipments required feeding and special attention en route and would have perished had they been shipped in the ordinary way. The result of the year's work in foreign countries has been satisfactory and most of the importations have arrived in this country in good condition. There are, however, a number of species of gypsy moth parasites that are extremely difficult to ship or colonize until more information can be secured concerning their life histories and habits. Work along these lines will be attempted during the coming year.

The work of collecting data on selected areas to determine the effect of defoliation on different species of trees has been continued. This pro-

ject has been under way for more than 10 years and the longer it is carried on the more valuable will be the information that is secured. In connection with this project the large sample plots selected to test the ability of different forest stands to survive defoliation have been continued and the necessary data secured.

Last year it was realized that the rate of parasitism had decreased slightly when compared with the previous year and the statement was made that if this decrease continued serious outbreaks of the insect might result. During the past summer heavy defoliation has occurred on Cape Cod where thousands of acres of trees have been completely denuded. In other sections of the State the infestation, based on the number of egg clusters found in the fall, has increased sharply and there has been a decided falling off in parasitism. The situation at present is critical and it is impossible to predict whether the gypsy moth will increase and heavy damage result or whether parasites will become more abundant and bring about a reduction in infestation. It is impossible to predict just what will happen but every effort should be made to prevent further increase of the insect.

Data secured last year indicated that the parasitism of the brown-tail moth had been reduced, somewhat. Although full information is not at hand at the present time, the reports thus far received indicate that the insect is more abundant this year than during the previous year and unless effective control measures are employed some defoliation is likely to result during the coming year.

APPENDIX

FINANCIAL STATEMENT

Receipts and Expenditures for Year ending November 30, 1926

Purpose of Appropriation	Amount	Refunds, Balances and Transfers	Expendi- tures	Balance to 1927	Balance to Treasury
Salary of Commissioner	\$6,000	—	\$6,000 00	—	—
Personal Services	11,400	—	10,745 00	—	\$655 00
Expenses of Commissioner	250	—	81 74	—	168 26
Office Incidentals	5,000	\$3 33	4,315 89	—	687 44
General Forestry and Nurseries	13,000	—	11,335 57	—	1,664 43
Purchase and Planting of Forest Lands	8,500	—	8,499 99	—	01
Prevention of Forest Fires	60,000	416 03	59,373 39	—	1,042 64
Federal Forestry Fund	—	18,259 65	18,158 12	101 53	—
Protection against Forest Fires	2,000	—	1,445 23	—	554 77
Reimbursement for Fighting Fires	1,000	—	276 88	—	723 12
Suppression of Gypsy and Brown-tail Moths	50,000	26,911 36	72,656 81	4,254 55	—
Maintenance of State Forests	25,000	20 90	24,977 59	—	43 31
Purchase and Development of State For- ests	151,500	6,719 33	143,555 77	14,663 56	—
Maintenance of Mount Grace	500	—	490 80	—	9 20
Maintenance of Standish Monument	2,000	—	1,958 55	—	41 45
Repair of Standish Monument	—	6,939 34	3,128 25	3,811 09	—
Legislative Investigation of Prevention of Forest Fires in Barnstable County	2,000	—	1,983 07	16 93	—
	\$338,150	\$59,269 94	\$368,982 65	\$22,847 66	\$5,589 63

Receipts, 1926.

For ferns sold	\$625.00
“ cord wood	1,241.15
“ hay, etc.	351.80
“ apples	20.00
“ blueberries	110.00
“ lumber, posts and poles	2,073.86
“ rent and camp sites	1,100.67
“ sale of buildings and wagons, etc.	249.00
“ right of way	2,000.00
“ damages by fire	2,750.00
“ receipts at Standish Monument	913.10
“ books, maps, etc.	71.80
“ redemption of lots	994.55
“ damages on reforestation lots	264.00
“ spool wood sold on reforestation lots	140.00
“ examinations	65.00
“ trees sold	12,290.74
“ donations to North Shore Fund	4,000.00
“ highway work	800.00
“ supplies for gypsy moth work	6,230.91
“ sale of discarded equipment	97.00
“ private spraying on North Shore	498.43
“ donations to cost of fire towers	1,250.00
“ supplies for fire fighting	2,217.19
“ interest on bank deposit	112.94
	<hr/> \$40,467.14

**STATEMENT OF EXPENDITURES AND RECEIPTS ON STATE FORESTS FOR THE
YEAR ENDING NOVEMBER 30, 1926**

State Forest	Planting and Nurseries	General Up- keep, Fire Lines and Roads	Surveying Titles	Land	Totals	Receipts
Arthur Warton Swann	\$324 00	\$1,401 62	—	—	\$1,725 62	\$90 00
Ashburnham	—	1,084 00	\$353 25	\$115 00	1,552 25	139 00
Barre	—	36 26	—	—	36 26	—
Bash Bish	—	—	—	—	—	—
Beartown	846 50	152 50	—	—	999 00	20 00
Blandford	—	276 50	593 50	—	870 00	2,000 00
Brimfield	—	—	763 57	—	763 57	—
Clarksburg	—	—	—	—	—	—
Colrain	130 00	453 50	—	—	583 50	75 00
Conway	—	—	242 91	1,015 00	1,257 91	—
Erving	821 60	5,213 58	48 00	—	6,083 18	207 15
Foxborough	—	—	508 12	1,914 17	2,422 29	—
Harold Parker	50 75	6,439 21	—	—	6,489 96	561 35
Hawley	—	—	25 50	—	25 50	—
Hubbardston	—	—	—	—	—	—
Leominster	—	—	316 08	3,302 29	3,618 37	—
Martha's Vineyard	2,792 84	3,581 67	117 21	7,872 71	14,364 43	—
Mohawk Trail	172 99	1,550 02	411 15	270 00	2,404 16	845 54
Monroe	100 00	—	44 65	1,430 00	1,574 65	40 00
Mount Grace	73 50	465 00	—	—	538 50	138 50
Myles Standish	2,521 88	6,220 68	16 00	70 00	8,828 56	964 00
Northfield	—	—	—	—	—	—
Oakham	—	4 00	—	—	4 00	50 00
October Mountain	2,919 50	14,327 21	122 35	1,000 00	18,369 06	553 55
Otis	—	150 50	—	—	150 50	—
Otter River	2,972 21	2,467 54	—	—	5,439 75	2,799 80
Oxford	—	—	—	—	—	—
Peru	—	—	227 30	2,612 20	2,839 50	5 00
Petersham	—	—	—	—	—	—
Pittsfield	—	—	1,298 81	—	1,298 81	—
Sandisfield	—	24 94	70 00	5,020 05	5,114 99	201 00
Savoy Mountain	1,462 75	1,053 07	167 61	1,000 00	3,683 43	567 29
Shawme	1,572 32	6,302 64	8 08	608 10	8,491 14	112 60
Shutesbury	—	56 00	—	236 00	292 00	—
Spencer	—	139 75	264 28	1,125 62	1,529 65	10 70
Sutton	—	—	41 04	125 00	166 04	—
Templeton	869 54	—	172 66	1,453 74	2,495 94	—
Tolland-Granville	754 58	2,544 78	319 60	—	3,618 96	1,000 00
Warwick	—	56 00	23 03	287 15	366 18	10 00
Wendell	371 50	3,009 25	487 33	376 95	4,245 03	15 00
Westminster	—	—	343 75	1,104 66	1,448 41	—
Windsor	955 25	80 03	3 14	165 00	1,203 42	116 00
Worthington	—	—	—	—	—	—
	\$19,711 71	\$57,090 25	\$6,988 92	\$31,103 64	\$114,894 52	\$10,521 48

THE DISTRIBUTION OF SUPPLIES.

Supplies have been furnished to towns and cities for gypsy moth work as usual.

The amounts given below do not correspond with the amount of aid given to the municipalities, as some towns make payment to the state for all or a part of the bill for supplies, according to the amount of their net expenditures and their class, under the provisions of section 4, chapter 132 of the General Laws.

For amounts received from this office in reimbursement and for expenditures, see table on page 31.

LIST OF TOWNS AND AMOUNTS OF SUPPLIES FURNISHED FOR 1926.

Acton	\$4.72	Bolton	395.56
Ashburnham	92.35	Boxborough	384.81
Ashby	410.02	Boxford	331.59
Ashland	7.15	Boylston	29.92
Bedford	2.10	Brewster	491.42
Berkley	222.76	Burlington	1.40
Berlin	162.31	Carlisle	428.34

Dennis	393.78	Plainville	201.59
Dracut	10.35	Plympton	186.86
Dunstable	177.69	Raynham	43.33
East Bridgewater	3.10	Rochester	315.12
Eastham	249.50	Rowley	393.91
Freetown	365.92	Salisbury	2.35
Georgetown	462.27	Sandwich	1,619.40
Groton	18.90	Sherborn	1,189.47
Groveland	161.44	Southborough	15.70
Halifax	418.03	Sterling	7.15
Hanover	15.70	Tewksbury	447.78
Hanson	237.48	Townsend	9.85
Harvard	182.50	Truro	99.74
Harwich	677.76	Tyngsborough	292.13
Kingston	211.35	Wayland	9.10
Lakeville	1,592.06	Wellfleet	297.06
Lunenburg	11.14	Wenham	1.75
Lynnfield	363.66	West Boylston	61.22
Mashpee	499.55	West Bridgewater	454.88
Middleton	325.62	West Newbury	231.33
Newbury	13.60	Westford	8.88
Norfolk	247.82	Westminster	18.35
North Reading	37.26	Wilmington	479.11
Norwell	361.66	Yarmouth	356.47
Orleans	91.10		
Pembroke	77.67		\$16,924.94
Pepperell	11.05		

Purchase and Development of State Forests	\$547.83
Purchase and Planting of Forest Lands	30.94
General Forestry and Nurseries	305.78
Maintenance of State Forests	407.18
Prevention of Forest Fires	1,062.35
Special North Shore Fund	429.62
Special Legislative Investigation of Prevention of Forest Fires in Barnstable County	43.06
Automobile repairs, etc.	856.66

\$3,769.54

TABLE SHOWING EXPENDITURES AND REIMBURSEMENTS OF TOWNS AND
CITIES FOR THE YEAR 1926

Cities and Towns	1926						1927
	Required Expendi- ture	Total Net Expendi- ture	Private Work	Reimburse- ment	Tools supplied	Total Amount received from State	Required Expendi- tures
Abington . . .	\$2,681 55	-	-	-	-	-	\$2,681 55
Acton . . .	1,269 39	-	-	-	\$4 72	-	1,269 39
Acushnet . . .	1,849 38	-	-	-	-	-	1,849 38
Adams . . .	5,000 00	-	-	-	-	-	5,000 00
Agawam . . .	3,421 15	-	-	-	-	-	3,421 15
Alford . . .	138 59	-	-	-	-	-	138 59
Amesbury . . .	5,000 00	-	-	-	-	-	5,000 00
Amherst . . .	4,262 74	-	-	-	-	-	4,262 74
Andover . . .	5,000 00	-	-	-	-	-	5,000 00
Arlington . . .	5,000 00	-	-	-	-	-	5,000 00
Ashburnham . . .	842 92	-	-	-	92 35	-	842 92
Ashby . . .	556 30	545 92	{ 61 00 *173 20 }	-	410 02	399 64	556 30
Ashfield . . .	583 00	-	-	-	-	-	583 00

* Lead sold

Cities and Towns	1926						1927
	Required Expendi- ture	Total Net Expendi- ture	Private Work	Reimburse- ment	Tools supplied	Total Amount received from State	Required Expendi- tures
Ashland	\$ 1,274 59	-	-	-	\$7 15	-	\$1,274 59
Athol	5,000 00	-	-	-	-	-	5,000 00
Attleboro	5,000 00	-	-	-	-	-	5,000 00
Auburn	1,942 35	-	-	-	-	-	1,942 35
Avon	1,039 48	-	-	-	-	-	1,039 48
Ayer	1,570 76	-	-	-	-	-	1,570 76
Barnstable	5,000 00	-	-	-	-	-	5,000 00
Barre	2,438 27	-	-	-	-	-	2,438 27
Becket	448 73	-	-	-	-	-	448 73
Bedford	1,249 82	\$1,434 65	\$778 98	\$174 50	2 10	\$176 60	1,249 82
Belchertown	884 87	-	-	-	-	-	884 87
Bellingham	1,065 49	-	-	-	-	-	1,065 49
Belmont	5,000 00	-	-	-	-	-	5,000 00
Berkley	397 43	689 77	135 50	292 34	222 76	515 10	397 43
Berlin	431 37	461 37	{ 48 50 *31 25 }	-	162 31	162 31	431 37
Bernardston	405 66	-	-	-	-	-	405 66
Beverly	5,000 00	-	-	-	-	-	5,000 00
Billerica	4,083 21	-	-	-	-	-	4,083 21
Blackstone	1,270 90	-	-	-	-	-	1,270 90
Blandford	520 09	-	-	-	-	-	520 09
Bolton	418 54	356 40	361 00	-	395 56	333 42	418 54
Boston	5,000 00	-	-	-	-	-	5,000 00
Bourne	3,900 66	-	-	-	-	-	3,900 66
Boxborough	145 00	145 37	*420 50	-	384 81	384 81	145 00
Boxford	458 91	588 71	121 63	129 80	331 59	461 39	458 91
Boylston	341 05	525 78	{ 41 05 *254 64 }	175 00	29 92	204 92	341 05
Braintree	5,000 00	-	-	-	-	-	5,000 00
Brewster	655 35	1,389 75	{ 7 50 *71 68 }	725 57	491 42	1,216 99	655 35
Bridgewater	3,186 79	-	-	-	-	-	3,186 79
Brimfield	606 48	-	-	-	-	-	606 48
Brockton	5,000 00	-	-	-	-	-	5,000 00
Brookfield	693 70	-	-	-	-	-	693 70
Brookline	5,000 00	-	-	-	-	-	5,000 00
Buckland	1,333 28	-	-	-	-	-	1,333 28
Burlington	754 54	674 05	158 60	-	1 40	-	754 54
Cambridge	5,000 00	-	-	-	-	-	5,000 00
Canton	3,941 46	-	-	-	-	-	3,941 46
Carlisle	270 00	496 75	-	-	428 34	428 34	270 00
Carver	1,291 63	-	-	-	-	-	1,291 63
Charlemont	476 76	-	-	-	-	-	476 76
Charlton	1,012 88	-	-	-	-	-	1,012 88
Chatham	1,865 34	-	-	-	-	-	1,865 34
Chelmsford	4,394 04	-	-	-	-	-	4,394 04
Chelsea	5,000 00	-	-	-	-	-	5,000 00
Cheshire	677 02	-	-	-	-	-	677 02
Chester	695 59	-	-	-	-	-	695 59
Chesterfield	231 79	149 00	-	-	-	-	231 79
Chicopee	5,000 00	-	-	-	-	-	5,000 00
Chilmark	210 37	-	-	-	-	-	210 37
Clarksburg	587 44	-	-	-	-	-	587 44
Clinton	5,000 00	-	-	-	-	-	5,000 00
Cohasset	3,835 91	-	-	-	-	-	3,835 91
Colrain	999 85	-	-	-	-	-	999 85
Concord	3,783 74	-	-	-	-	-	3,783 74
Conway	448 08	-	-	-	-	-	448 08
Cummington	243 34	-	-	-	-	-	243 34
Dalton	3,387 57	-	-	-	-	-	3,387 57
Dana	361 68	202 87	35 80	-	-	-	361 68
Danvers	5,000 00	-	-	-	-	-	5,000 00
Dartmouth	4,856 57	-	-	-	-	-	4,856 57
Dedham	5,000 00	-	-	-	-	-	5,000 00
Deerfield	2,267 38	-	-	-	-	-	2,267 38
Dennis	890 44	1,312 80	{ 403 15 *35 68 }	413 36	393 78	807 14	890 44
Dighton	1,959 46	-	-	-	-	-	1,959 46
Douglas	997 02	-	-	-	-	-	997 02
Dover	1,491 97	-	-	-	-	-	1,491 97
Draut	2,427 04	-	-	-	10 35	-	2,427 04
Dudley	2,827 39	-	-	-	-	-	2,827 39
Dunstable	279 94	279 73	{ 135 48 *57 96 }	-	177 69	177 48	279 94
Duxbury	2,202 50	-	-	-	-	-	2,202 50
East Bridgewater . .	2,227 03	-	-	-	3 10	-	2,227 03

* Lead sold

Cities and Towns	1926						1927
	Required Expendi- ture	Total Net Expendi- ture	Private Work	Reimburse- ment	Tools supplied	Total Amount received from State	Required Expendi- tures
East Brookfield . . .	\$503 08	-	-	-	-	-	\$503 08
East Longmeadow . . .	1,427 42	-	-	-	-	-	1,427 42
Eastham . . .	376 42	\$533 88	\$249 66	\$157 46	\$249 50	\$406 96	376 42
Easthampton . . .	5,000 00	-	-	-	-	-	5,000 00
Easton . . .	3,056 34	-	-	-	-	-	3,056 34
Edgartown . . .	1,223 10	-	-	-	-	-	1,223 10
Egremont . . .	391 66	-	-	-	-	-	391 66
Enfield . . .	347 74	-	-	-	-	-	347 74
Erving . . .	1,689 07	-	-	-	-	-	1,689 07
Essex . . .	632 14	-	-	-	-	-	632 14
Everett . . .	5,000 00	-	-	-	-	-	5,000 00
Fairhaven . . .	5,000 00	-	-	-	-	-	5,000 00
Fall River . . .	5,000 00	-	-	-	-	-	5,000 00
Falmouth . . .	5,000 00	-	-	-	-	-	5,000 00
Fitchburg . . .	5,000 00	-	-	-	-	-	5,000 00
Florida . . .	669 98	-	-	-	-	-	669 98
Foxborough . . .	2,002 80	-	-	-	-	-	2,002 80
Framingham . . .	5,000 00	-	-	-	-	-	5,000 00
Franklin . . .	4,184 79	-	-	-	-	-	4,184 79
Freetown . . .	902 21	1,005 01	277 75	100 00	365 92	465 92	902 21
Gardner . . .	5,000 00	-	-	-	-	-	5,000 00
Gay Head . . .	40 30	-	-	-	-	-	40 30
Georgetown . . .	873 57	876 76	{ 611 15 *26 40 }	-	462 27	462 27	873 57
Gill . . .	403 92	-	-	-	-	-	403 92
Gloucester . . .	5,000 00	-	-	-	-	-	5,000 00
Goshen . . .	169 27	-	-	-	-	-	169 27
Gosnold . . .	513 31	-	-	-	-	-	513 31
Grafton . . .	3,208 53	-	-	-	-	-	3,208 53
Granby . . .	486 00	-	-	-	-	-	486 00
Granville . . .	339 73	360 00	27 50	-	-	-	339 73
Great Barrington . . .	5,000 00	-	-	-	-	-	5,000 00
Greenfield . . .	5,000 00	-	-	-	-	-	5,000 00
Greenwich . . .	281 82	-	-	-	-	-	281 82
Groton . . .	1,779 15	-	-	-	18 90	-	1,779 15
Groveland . . .	798 44	555 04	{ 315 40 *57 15 }	-	161 44	-	798 44
Hadley . . .	1,737 89	-	-	-	-	-	1,737 89
Halifax . . .	586 85	703 25	{ 572 20 *49 84 }	116 40	418 03	534 43	586 85
Hamilton . . .	2,183 02	-	-	-	-	-	2,183 02
Hampden . . .	272 13	-	-	-	-	-	272 13
Hancock . . .	276 08	-	-	-	-	-	276 08
Hanover . . .	1,467 79	-	-	-	15 70	-	1,467 79
Hanson . . .	1,116 18	1,114 31	398 00	-	237 48	235 61	1,116 18
Hardwick . . .	2,351 58	-	-	-	-	-	2,351 58
Harvard . . .	927 84	892 46	*210 76	-	182 50	147 12	927 84
Harwich . . .	1,400 07	1,920 74	{ 1,098 89 *64 20 }	514 00	677 76	1,191 76	1,400 07
Hatfield . . .	1,858 07	-	-	-	-	-	1,858 07
Haverhill . . .	5,000 00	-	-	-	-	-	5,000 00
Hawley . . .	124 31	-	-	-	-	-	124 31
Heath . . .	201 05	-	-	-	-	-	201 05
Hingham . . .	5,000 00	-	-	-	-	-	5,000 00
Hinsdale . . .	458 38	-	-	-	-	-	458 38
Holbrook . . .	1,436 43	-	-	-	-	-	1,436 43
Holden . . .	1,356 24	-	-	-	-	-	1,356 24
Holland . . .	108 37	-	-	-	-	-	108 37
Holliston . . .	1,578 96	-	-	-	-	-	1,578 96
Holyoke . . .	5,000 00	-	-	-	-	-	5,000 00
Hopedale . . .	3,552 96	-	-	-	-	-	3,552 96
Hopkinton . . .	1,205 67	-	-	-	-	-	1,205 67
Hubbardston . . .	551 42	-	-	-	-	-	551 42
Hudson . . .	3,702 91	-	-	-	-	-	3,702 91
Hull . . .	5,000 00	-	-	-	-	-	5,000 00
Huntington . . .	702 89	-	-	-	-	-	702 89
Ipswich . . .	3,899 02	-	-	-	-	-	3,899 02
Kingston . . .	1,226 31	963 18	213 25	-	211 35	-	1,226 31
Lakeville . . .	700 31	1,341 56	{ 208 25 *94 19 }	569 00	1,592 06	2,161 06	700 31
Lancaster . . .	1,530 56	-	-	-	-	-	1,530 56
Lanesborough . . .	593 04	-	-	-	-	-	593 04
Lawrence . . .	5,000 00	-	-	-	-	-	5,000 00
Lee . . .	2,739 24	-	-	-	-	-	2,739 24
Leicester . . .	2,126 21	-	-	-	-	-	2,126 21
Lenox . . .	3,170 37	-	-	-	-	-	3,170 37

* Lead sold

Cities and Towns	1926						1927
	Required Expendi- ture	Total Net Expendi- ture	Private Work	Reimburse- ment	Tools supplied	Total Amount received from State	Required Expendi- tures
Leominster . . .	\$5,000 00	-	-	-	-	-	\$5,000 00
Leverett . . .	247 62	-	-	-	-	-	247 62
Lexington . . .	5,000 00	-	-	-	-	-	5,000 00
Leyden . . .	146 29	-	-	-	-	-	146 29
Lincoln . . .	1,410 60	-	-	-	-	-	1,410 60
Littleton . . .	853 37	-	-	-	-	-	853 37
Longmeadow . .	3,264 26	-	-	-	-	-	3,264 26
Lowell . . .	5,000 00	-	-	-	-	-	5,000 00
Ludlow . . .	4,432 07	-	-	-	-	-	4,432 07
Lunenburg . . .	825 72	\$1,125 63	\$370 72	\$217 48	\$11 14	\$228 62	825 72
Lynn . . .	5,000 00	-	-	-	-	-	5,000 00
Lynnfield . . .	1,162 73	1,465 87	639 10	278 53	363 66	642 19	1,162 73
Malden . . .	5,000 00	-	-	-	-	-	5,000 00
Manchester . . .	5,000 00	-	-	-	-	-	5,000 00
Mansfield . . .	4,542 62	-	-	-	-	-	4,542 62
Marblehead . . .	5,000 00	-	-	-	-	-	5,000 00
Marion . . .	1,940 36	-	-	-	-	-	1,940 36
Marlborough . .	5,000 00	-	-	-	-	-	5,000 00
Marshfield . . .	2,068 19	-	-	-	-	-	2,068 19
Mashpee . . .	309 42	1,053 10	725 25	743 68	499 55	1,243 23	309 42
Mattapoisett . .	1,326 19	-	-	-	-	-	1,326 19
Maynard . . .	4,230 12	-	-	-	-	-	4,230 12
Medfield . . .	1,282 77	-	-	-	-	-	1,282 77
Medford . . .	5,000 00	-	-	-	-	-	5,000 00
Medway . . .	1,478 11	-	-	-	-	-	1,478 11
Melrose . . .	5,000 00	-	-	-	-	-	5,000 00
Mendon . . .	502 73	-	-	-	-	-	502 73
Merrimac . . .	1,014 54	-	-	-	-	-	1,014 54
Methuen . . .	5,000 00	-	-	-	-	-	5,000 00
Middleborough .	4,318 00	-	-	-	-	-	4,318 00
Middlefield . . .	145 10	-	-	-	-	-	145 10
Middleton . . .	681 49	504 18	197 50	-	325 62	148 31	681 49
Milford . . .	5,000 00	-	-	-	-	-	5,000 00
Millbury . . .	3,086 71	-	-	-	-	-	3,086 71
Millis . . .	1,438 02	-	-	-	-	-	1,438 02
Millville . . .	1,035 71	-	-	-	-	-	1,035 71
Milton . . .	5,000 00	-	-	-	-	-	5,000 00
Monroe . . .	419 10	-	-	-	-	-	419 10
Monson . . .	1,699 76	-	-	-	-	-	1,699 76
Montague . . .	5,000 00	-	-	-	-	-	5,000 00
Monterey . . .	321 92	-	-	-	-	-	321 92
Montgomery . . .	107 27	-	-	-	-	-	107 27
Mount Washington	90 96	-	-	-	-	-	90 96
Nahant . . .	2,354 33	-	-	-	-	-	2,354 33
Nantucket . . .	3,862 23	-	-	-	-	-	3,862 23
Natick . . .	5,000 00	-	-	-	-	-	5,000 00
Needham . . .	5,000 00	-	-	-	-	-	5,000 00
New Ashford . . .	60 61	-	-	-	-	-	60 61
New Bedford . . .	5,000 00	-	-	-	-	-	5,000 00
New Braintree . .	265 92	-	-	-	-	-	265 92
New Marlborough .	711 54	-	-	-	-	-	711 54
New Salem . . .	340 11	-	-	-	-	-	340 11
Newbury . . .	1,191 92	-	-	-	13 60	-	1,191 92
Newburyport . . .	5,000 00	-	-	-	-	-	5,000 00
Newton . . .	5,000 00	-	-	-	-	-	5,000 00
Norfolk . . .	829 40	980 88	296 85	151 48	247 82	399 30	829 40
North Adams . . .	5,000 00	-	-	-	-	-	5,000 00
North Andover . .	4,760 94	-	-	-	-	-	4,760 94
No. Attleborough .	5,000 00	-	-	-	-	-	5,000 00
North Brookfield .	1,516 56	-	-	-	-	-	1,516 56
North Reading . .	826 46	-	-	-	37 26	-	826 46
Northampton . . .	5,000 00	-	-	-	-	-	5,000 00
Northborough . . .	953 83	-	-	-	-	-	953 83
Northbridge . . .	5,000 00	-	-	-	-	-	5,000 00
Northfield . . .	1,111 38	-	-	-	-	-	1,111 38
Norton . . .	1,424 37	-	-	-	-	-	1,424 37
Norwell . . .	810 99	1,160 05	{ 930 26 *23 29 }	348 75	361 66	710 41	810 99
Norwood . . .	5,000 00	-	-	-	-	-	5,000 00
Oak Bluffs . . .	1,762 41	-	-	-	-	-	1,762 41
Oakham . . .	217 70	-	-	-	-	-	217 70
Orange . . .	3,127 79	-	-	-	-	-	3,127 79
Orleans . . .	1,572 13	-	-	-	91 10	-	1,572 13
Otis . . .	236 88	-	-	-	-	-	236 88
Oxford . . .	1,725 64	-	-	-	-	-	1,725 64
Palmer . . .	5,000 00	-	-	-	-	-	5,000 00

* Lead sold

Cities and Towns	1926						1927
	Required Expendi- ture	Total Net Expendi- ture	Private Work	Reimburse- ment	Tools supplied	Total Amount received from State	Required Expendi- tures
Paxton	\$421 16	-	-	-	-	-	\$421 16
Peabody	5,000 00	-	-	-	-	-	5,000 00
Pelham	291 95	-	-	-	-	-	291 95
Pembroke	1,068 59	\$1,007 16	\$813 71	-	\$77 67	\$16 24	1,068 59
Pepperell	1,783 55	-	-	-	11 05	-	1,783 55
Peru	167 42	-	-	-	-	-	167 42
Petersham	824 07	-	-	-	-	-	824 07
Phillipston	203 40	233 65	100 60	-	-	-	203 40
Pittsfield	5,000 00	-	-	-	-	-	5,000 00
Plainfield	180 31	-	-	-	-	-	180 31
Plainville	807 11	1,034 27	64 50	\$227 16	201 59	428 75	807 11
Plymouth	5,000 00	-	-	-	-	-	5,000 00
Plympton	361 99	736 60	172 50	373 15	186 86	560 01	361 99
Prescott	151 65	-	-	-	-	-	151 65
Princeton	603 93	-	-	-	-	-	603 93
Provincetown	2,067 01	-	-	-	-	-	2,067 01
Quincy	5,000 00	-	-	-	-	-	5,000 00
Randolph	1,860 01	-	-	-	-	-	1,860 01
Raynham	859 27	837 68	227 35	-	43 33	11 74	859 27
Reading	5,000 00	-	-	-	-	-	5,000 00
Rehoboth	929 27	-	-	-	-	-	929 27
Revere	5,000 00	-	-	-	-	-	5,000 00
Richmond	381 30	-	-	-	-	-	381 30
Rochester	640 19	-	-	-	315 12	-	640 19
Rockland	3,970 00	-	-	-	-	-	3,970 00
Rockport	2,282 93	-	-	-	-	-	2,282 93
Rowe	175 56	-	-	-	-	-	175 56
Rowley	586 03	885 82	{ 87 03 *55 43 }	299 19	393 91	693 10	586 03
Royalston	645 44	-	-	-	-	-	645 44
Russell	2,533 48	-	-	-	-	-	2,533 48
Rutland	654 57	-	-	-	-	-	654 57
Salem	5,000 00	-	-	-	-	-	5,000 00
Salisbury	1,222 22	-	-	-	2 35	-	1,222 22
Sandisfield	300 59	-	-	-	-	-	300 59
Sandwich	1,088 36	1,601 37	{ 91 45 *92 55 }	500 00	1,619 40	2,119 40	1,088 36
Saugus	4,572 32	-	-	-	-	-	4,572 32
Savoy	131 07	-	-	-	-	-	131 07
Scituate	4,401 05	-	-	-	-	-	4,401 05
Seekonk	1,775 15	-	-	-	-	-	1,775 15
Sharon	2,222 03	-	-	-	-	-	2,222 03
Sheffield	664 61	-	-	-	-	-	664 61
Shelburne	1,338 08	-	-	-	-	-	1,338 08
Sherborn	729 26	549 52	{ 350 62 *99 60 }	-	1,189 47	1,009 73	729 26
Shirley	1,244 44	-	-	-	-	-	1,244 44
Shrewsbury	2,509 55	-	-	-	-	-	2,509 55
Shutesbury	193 56	56 50	67 50	-	-	-	193 56
Somerset	2,035 39	-	-	-	-	-	2,035 39
Somerville	5,000 00	-	-	-	-	-	5,000 00
South Hadley	3,362 54	-	-	-	-	-	3,362 54
Southampton	403 02	-	-	-	-	-	403 02
Southborough	1,507 66	-	-	-	15 70	-	1,507 66
Southbridge	5,000 00	-	-	-	-	-	5,000 00
Southwick	927 80	-	-	-	-	-	927 80
Spencer	2,148 01	-	-	-	-	-	2,148 01
Springfield	5,000 00	-	-	-	-	-	5,000 00
Sterling	712 88	-	-	-	7 15	-	712 88
Stockbridge	2,514 39	-	-	-	-	-	2,514 39
Stoneham	4,372 54	-	-	-	-	-	4,372 54
Stoughton	3,469 49	-	-	-	-	-	3,469 49
Stow	834 30	1,303 56	{ 33 85 *311 60 }	415 12	-	415 12	834 30
Sturbridge	721 72	-	-	-	-	-	721 72
Sudbury	983 40	-	-	-	-	-	983 40
Sunderland	644 64	-	-	-	-	-	644 64
Sutton	1,058 32	-	-	-	-	-	1,058 32
Swampscott	5,000 00	-	-	-	-	-	5,000 00
Swansea	1,513 48	-	-	-	-	-	1,513 48
Taunton	5,000 00	-	-	-	-	-	5,000 00
Templeton	1,903 53	-	-	-	-	-	1,903 53
Tewksbury	1,480 27	1,625 31	668 25	145 04	447 78	592 82	1,480 27
Tisbury	1,824 75	-	-	-	-	-	1,824 75
Tolland	191 47	-	-	-	-	-	191 47
Topsfield	1,279 56	-	-	-	-	-	1,279 56

* Lead sold

Cities and Towns	1926						1927
	Required Expendi- ture	Total Net Expendi- ture	Private Work	Reimburse- ment	Tools supplied	Total Amount received from State	Required Expendi- tures
Townsend . . .	\$1,121 61	-	-	-	\$9 85	-	\$1,121 61
Truro . . .	410 28	\$808 62	\$45 25	\$325 50	99 74	\$425 24	410 28
Tyngsborough . . .	567 81	1,230 31	47 40	565 41	292 13	857 54	567 81
Tyringham . . .	223 24	-	-	-	-	-	223 24
Upton . . .	669 88	-	-	-	-	-	669 88
Uxbridge . . .	3,965 12	-	-	-	-	-	3,965 12
Wakefield . . .	5,000 00	-	-	-	-	-	5,000 00
Wales . . .	227 00	-	-	-	-	-	227 00
Walpole . . .	5,000 00	-	-	-	-	-	5,000 00
Waltham . . .	5,000 00	-	-	-	-	-	5,000 00
Ware . . .	4,741 57	-	-	-	-	-	4,741 57
Wareham . . .	4,904 70	-	-	-	-	-	4,904 70
Warren . . .	2,640 13	-	-	-	-	-	2,640 13
Warwick . . .	263 43	-	-	-	-	-	263 43
Washington . . .	116 88	-	-	-	-	-	116 88
Watertown . . .	5,000 00	-	-	-	-	-	5,000 00
Wayland . . .	1,958 77	-	-	-	9 10	-	1,958 77
Webster . . .	5,000 00	-	-	-	-	-	5,000 00
Wellesley . . .	5,000 00	-	-	-	-	-	5,000 00
Wellfleet . . .	505 77	1,024 11	163 78	491 70	297 06	788 76	505 77
Wendell . . .	512 14	-	-	-	-	-	512 14
Wenham . . .	1,364 56	-	-	-	1 75	-	1,364 56
West Boylston . . .	685 16	-	-	-	61 22	-	685 16
West Bridgewater . . .	1,140 72	1,791 07	{ 521 00 *48 86 }	500 00	454 88	954 88	1,140 72
West Brookfield . . .	681 92	-	-	-	-	-	681 92
West Newbury . . .	485 02	663 49	{ 161 60 *129 75 }	178 47	231 33	409 80	485 02
West Springfield . . .	5,000 00	-	-	-	-	-	5,000 00
West Stockbridge . . .	594 07	-	-	-	-	-	594 07
West Tisbury . . .	366 92	-	-	-	-	-	366 92
Westborough . . .	1,762 81	-	-	-	-	-	1,762 81
Westfield . . .	5,000 00	-	-	-	-	-	5,000 00
Westford . . .	2,442 46	-	-	-	8 88	-	2,442 46
Westhampton . . .	172 93	-	-	-	-	-	172 93
Westminster . . .	584 29	-	-	-	18 35	-	584 29
Weston . . .	3,494 66	-	-	-	-	-	3,494 66
Westport . . .	2,712 62	-	-	-	-	-	2,712 62
Westwood . . .	1,671 13	-	-	-	-	-	1,671 13
Weymouth . . .	5,000 00	-	-	-	-	-	5,000 00
Whateley . . .	638 20	-	-	-	-	-	638 20
Whitman . . .	3,729 78	-	-	-	-	-	3,729 78
Wilbraham . . .	1,616 38	-	-	-	-	-	1,616 38
Williamsburg . . .	841 61	-	-	-	-	-	841 61
Williamstown . . .	3,126 96	-	-	-	-	-	3,126 96
Wilmington . . .	1,277 65	1,240 18	624 06	-	479 11	441 64	1,277 65
Winchendon . . .	3,295 34	-	-	-	-	-	3,295 34
Winchester . . .	5,000 00	-	-	-	-	-	5,000 00
Windsor . . .	202 69	-	-	-	-	-	202 69
Winthrop . . .	5,000 00	-	-	-	-	-	5,000 00
Woburn . . .	5,000 00	-	-	-	-	-	5,000 00
Worcester . . .	5,000 00	-	-	-	-	-	5,000 00
Worthington . . .	268 48	-	-	-	-	-	268 48
Wrentham . . .	1,276 22	-	-	-	-	-	1,276 22
Yarmouth . . .	1,291 56	1,131 50	137 50	-	356 47	196 41	1,291 56

* Lead sold